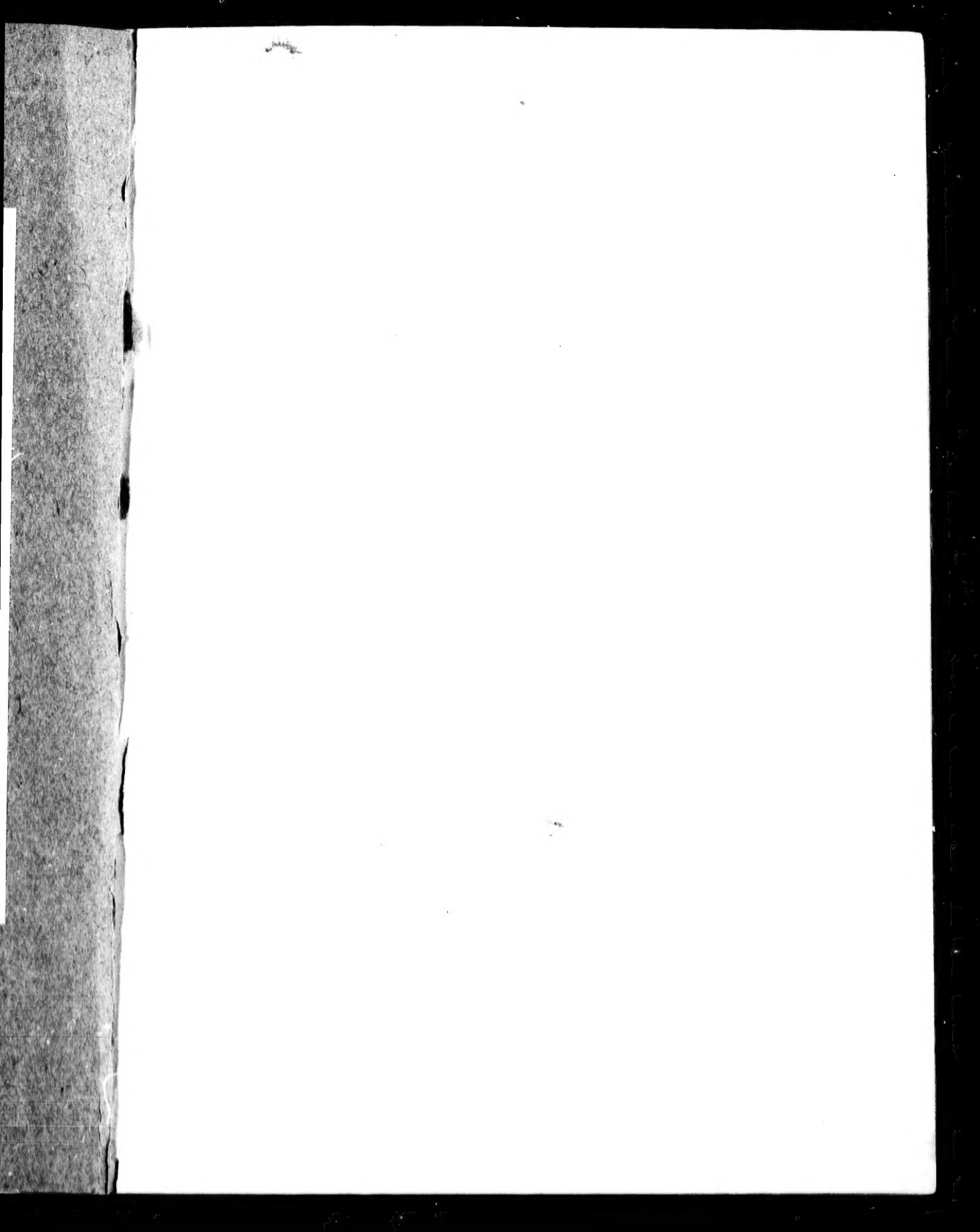


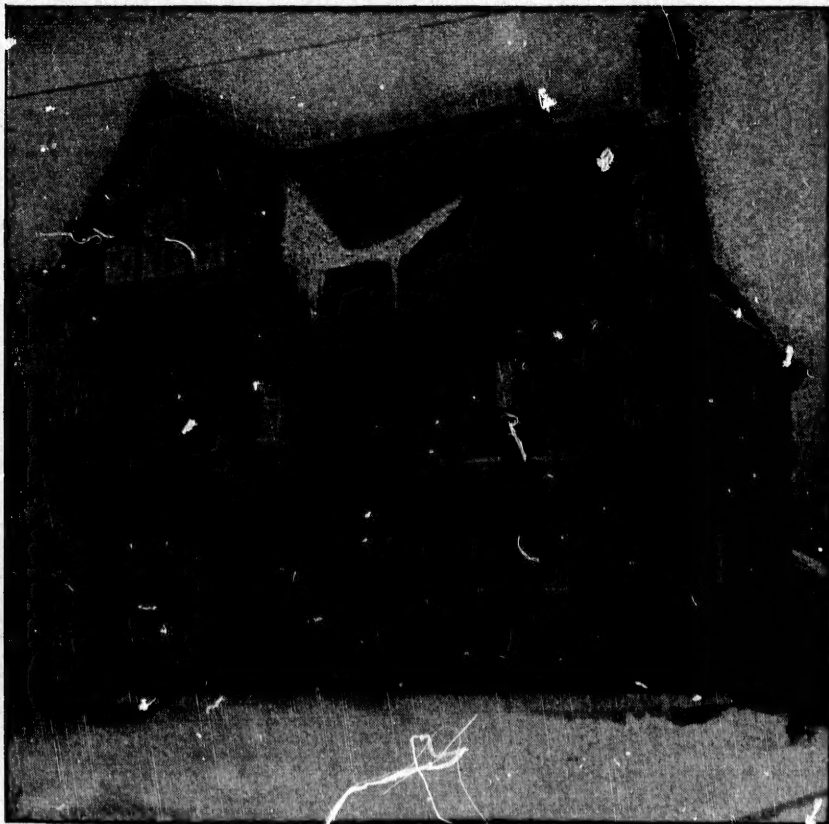


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Rosemount Avenue, Westmount.

A. J. COOKE, Architect.

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MONTREAL HOMES:

HINTS TO INTENDING BUILDERS.

BY

ARTHUR J. COOKE,
ARCHITECT.

When we mean to build,
We first survey the plot, then draw the model ;
And when we see the figure of the house,
Then must we rate the cost of the erection.

—*Shakespeare.*

FIRST EDITION.

MONTREAL :
WITNESS PRINTING HOUSE.
1898.

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INTRODUCTION.

Punch's advice to those about to marry—"Don't"—has often been seriously given to persons intending to build a home ; and this, too, by some who have been through the mill, and believe their disappointing experience to be the general or inevitable result.

To mention to a friend that one proposes to build is sometimes met by the rather facetious question—Are you looking for trouble ? or familiar quotations, such as " Fools build houses, for wise men to live in," etc.

Undoubtedly there are often failures in building—many snares and pitfalls abound to entrap the unwary, as, indeed, in any venture—but these may easily be circumvented with a little care and forethought, such as good business people exercise in all their undertakings.

Fruitful sources of failure consist in lightly entering upon operations without first sitting down and counting the cost, or in not sufficiently instructing the Architect as to the requirements. How very often, too,

prospective builders buy everything in sight of the books alluringly advertised in American magazines giving plans of houses alleged to cost from \$500.00 upwards, and by which they are told Architects' services can be dispensed with. As well might we try to wear all the year round such garments as are used by people in more equable climes as to dwell in such houses in Canada.

In spite of the clamorous outcry against Rudyard Kipling for writing "Our Lady of the Snows," we know only too well that we have the bugbear of a rigorous climate to contend with, ranging from 30 degrees below zero to 95 above, which naturally necessitates special planning and construction in our dwellings. What is considered cold weather in the Southern or Middle States, where the plans in the above-mentioned books would be suitable, is regarded as mild here, for has not the irrepressible Kipling sarcastically written of a precocious Canadian youth :

There was once a small boy in Quebec,
Who was buried in snow to the neck ;
When they said, "Are you friz ?"
He replied : "Yes, I is ;
But we don't call this cold in Quebec."

"In a multitude of councillors there is wisdom" may be a perfectly true proverb, but hardly good advice to the intending house builder ; that is, if he

consults every Tom, Dick and Harry who have been associated in a more or less degree with building operations, it being next to impossible, with so many conflicting opinions, to separate and assimilate the wheat from the chaff.

Much information can be obtained from old-established contractors, and especially so from them as to the choice of an Architect, although a keen observer should have no difficulty in selecting one from looking around amongst the many and varied styles of residences to be seen in our beautiful city. "By their works ye shall know them" is very applicable to show the degree of ability amongst the members of that profession.

The following chapters of this little book are written to give information in a concise form to enable anyone contemplating building to be somewhat conversant with what is needed in house-planning and construction sufficiently to lay before the Architect their requirements intelligently.

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ON THE SELECTION OF A SITE.

The selection of a site for a residence which will increase in value and desirability, is anything but an easy matter. A very little study of the mutable character of residential districts will convince anyone that the qualities almost of a seer are requisite.

Old residents of Montreal will remember that the north side of St. James Street was once the fashionable quarter, later St. Antoine Street, Beaver Hall Hill and Phillips Square, and again Dorchester, St. Catherine and Sherbrooke Streets. More recently the finest modern residences have been erected in the quieter and more secluded streets running north from Sherbrooke Street, whilst Westmount, with its open position and model municipal government is now attracting a large share of the better class of dwellings.

The advent of the Electric Railway system has revolutionized the old order of things, making formerly remote districts accessible for home-seekers, although deteriorating streets along its route for residential purposes.

The trend has steadily been north and west, and it is believed will naturally continue. In selecting a sparsely-built locality, the purchaser of a lot is some-

what handicapped, and the increase in the value of his investment an uncertainty compared to that of a property in an assured and built-up neighborhood of a good class of dwellings. But in the former case the danger would be lessened by choosing a corner site. The lot in the rear of a deep corner one is, as a rule, one to be avoided, the possibility of a stable being built on the end of the neighboring lot would be a deterrent factor.

Again, pioneers on new streets, with their houses well built back from the street line, are often troubled by new-comers building in front of them.

Too little thought is generally given to the aspect of a site. A home into which the sun's rays rarely penetrate cannot be anything but gloomy, and will exercise its influence upon the inmates. The character of the subsoil of the site for a foundation should always be ascertained before purchasing by digging test holes, for if quicksands or soft blue clay is found, necessitating piling, the value of a lot is very much decreased. The cost of piling for a residence under ordinary conditions would be \$5.00 per lineal foot of wall to be supported, thus a lot upon which it is proposed to erect a building of 200 feet in girth would be lessened in value \$1,000. And similarly, if rock is found, and it is necessary to blast for the cellar walls, the extra cost would also have to be considered.

If a strata of well-drained sand at least two feet in thickness is found over blue clay at the depth desired to build, it is generally sufficient to carry a three-story residence without any fear of subsidence, although

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such a proceeding is unscriptural. The foot of a hill is sometimes poor building land, the wash of the surface from the higher ground being often deposited in a pocket at the bottom, and a house built upon it is likely to be damp and liable to settlement.

ON PLANNING A HOME.

Nothing is more likely to lead to failure than the inability of the client to give general ideas of his requirements to the Architect, yet with a very little study, and in visiting and comparing houses already built, the internal arrangements could be easily suggested for the latter to work out harmoniously. There are some people who possess a natural aptitude for planning, and can produce a fairly good floor plan. The approximate dimensions required should be obtained by measuring suitable rooms, and a general rough plan can then be made. The ladies should be especially consulted, being, as a rule, much more proficient in the laying out of a home than men, and it is only right and proper that they, having to pass the greater part of their time in the house, should be accorded every opportunity to arrange it conveniently. The great object to be sought in planning a house is compactness and accessibility, long passages being a bane both from an artistic and economical standpoint.

Harsh lines and rigid uniformity should be guarded against by the liberal use of such features as ingle-nooks or cosy corners, bay windows, arched openings

and recessed fire-places. Now that electric-lighting is so cheap and much in vogue, low ceilings are practicable and add much to an idea of breadth and cosiness, besides saving fuel, and allowing of the easy extraction of vitiated air from the rooms.

The entrance features should have much thought bestowed upon them, as nothing adds more to the appearance of a home than a well-arranged front door and porch, vestibule, entrance hall and staircase.

Above all things, do not adopt the stereotyped straight flight of precipitous stairs directly facing the front door. A brick mantel in an entrance hall gives a very cheery and homelike look, and, unless very elaborate, is not costly. Where possible, the following conditions should be observed: The dining-room, if used as a breakfast room, should have an eastern aspect, the parlour facing south to west, whilst the culinary department would be preferable north or east. The best method to be followed in making a plan for oneself, is to use Engineers' section paper, which may be obtained at most stores selling draughting material. The entire surface of this paper is divided into squares of one-eighth of an inch, and for the purpose required will be supposed to represent one foot each way. The points of the compass should be ascertained in relation to position of site and marked at the head of paper. It will not always be possible, and probably in the majority of cases impossible, to meet the above suggestions of aspect, other conditions being often inexorable. As a rule, when clients draw plans themselves for the Architect to put into shape, only a single line diagram

is made, and often without a staircase. Neat measurements, too, are given of the rooms without taking into account thickness of walls and partitions, and not being made to scale, are almost certain to be out of proportion, and therefore useless. The plan as illustrated shows the first floor of a modern residence properly laid out on section paper. (A photograph of the house is given on frontispiece.) The outer walls are of brick, twelve inches thick, and take up the space of one square. If the walls were of solid stone, two squares would be taken up, or if veneered with a brick backing, one and a-half squares; ordinary lath and plaster partitions take up half a square, double partitions for sliding door pockets one square, stair treads three-quarters of a square or a trifle more, and so on.

To calculate the space required for stairs, divide the proposed height, in inches, from floor to floor by seven inches, representing the average height of rise to each step or tread, and in the drawing each line will represent a "riser."

In planning the rooms, always arrange for the absolutely essential articles of furniture, especially so in the case of bedrooms, where the bed, bureau and washstand should be shown. Unless this is done, even a large apartment will often be found devoid of appropriate spaces for its bare requirements.

It is advisable, if the plan will allow it, to group the various sanitary offices in the same part of the building on each flat; this will admit of the use of one stack of soil pipe, and afford easy access to the plumbing arrangements.

If it is proposed to build on the mitoyen or division line between properties, ten inches of the neighboring lot should be taken for the masonry of foundation wall, exclusive of the footing stones, and six inches for brick, if the thickness of wall is twelve inches or a brick and a-half thick. Should the wall be already built as a mitoyen wall, notice must be given of the intention to use it in common, and half of its value paid to the adjoining owner. In case the wall is not sufficiently high for the proposed building, a surcharge of one-sixth of the cost of the added wall must also be paid. Sidelights directly overlooking an adjoining property are not permissible at a less distance than six feet, French measure, equal to six feet four, English measure, from division line. The law also provides that oblique views must not be less than two feet from same line. Although a legal decision was once given defining a view from an oblique sidelight of a bay window to come under the six-feet provision, the law as thus interpreted has been more honored in the breach than in the observance, and there are very few bay windows that do not offend in this requirement.

The above conditions and suggestions, if carefully followed, should help a client to prepare tolerably fair floor plans, which will materially assist the Architect. The latter most likely will find a great deal to rearrange, and may point out many defects, but no doubt his finished plan will be much better appreciated by the client having gone over the ground himself, and thus satisfaction will be gained by all concerned.

FOUNDATIONS, MASONRY AND CUT STONE.

It would be superfluous to dilate on the imperative need of building on a sure foundation ; a glance at many of Montreal's buildings will show the dire results which have attended neglect in this important particular. Quicksands and soft blue clay are largely responsible for this, and although piling is the best and cheapest means of treating such subsoil, stability cannot be absolutely assured ; there may still be places where a subsidence in the foundation will set in sufficient to cause ugly cracks in the superstructure. Sticks of young spruce about seven to nine inches in diameter are commonly used for piling ; but tamarac is by far the best material, being tougher and less liable to decay. The piles should be driven down to rock or into a sufficiently heavy hard pan, often some ten to thirty feet below surface. After cutting off the heads to a level six inches above the bottom of trench, a foot of concrete should be thrown in to form one homogeneous bed and to keep the plies from spreading. The foundation is then ready for footings and masonry in the usual way. Sometimes for the foundation of stone steps, dwarf walls or where the super-structure is intended to be light and subsoil not altogether bad, planking is resorted to—three-inch tamarac, cedar, spruce or hemlock planks are laid diagonally in two thicknesses in opposite directions, six to eight feet long and well spiked together. This, too, should be covered with a bed of concrete, although not usually

done. If shelving rock is met with, level stepped beds must be cut in same to receive the masonry. It often happens that only a small portion of the subsoil of a site is bad, or one portion is rock and the other fairly good hard pan. These conditions are very likely to cause unequal settlement in the masonry unless carefully taken into account and prepared for. Ordinary foundations, where the subsoil is a good stiff bottom of hard pan, are built of limestone and mortar masonry two feet thick on a single bed of footing stone at least three feet wide and eight inches thick. All the joints of the masonry are flushed up with mortar, but it is always advisable to cover the whole outside surface, from footings to ground line, with half-an-inch of pure Portland cement, the extra cost over lime mortar being a mere bagatelle.

If the basement or cellar has been space obtained by blasting out the rock, the fissures in the cross-cut surface will weep in the spring and fall, in some cases continually, and if not provided against when building, there will be the mischief to pay afterwards through the flooding of cellar. The best means by which this can be prevented when the foundations are being put in, is to leave a clear two feet of space all around the outside of wall from the bed of the footings to the surface. The bottom should then be dished and graded in cement to a fall to a drain, and the trench filled loosely with broken stone. Two rows of the porous farm tiles first laid under the stone would make a still better job.

The question of what kind of stone to use for the front of the residence resolves itself to one of taste

and price. Until the last ten years limestone held almost undisputed sway, since then many varieties of sand and other free stones have been employed in some of the best buildings. Limestone from our local quarries is, of course, far cheaper than sandstones, but is harder to work, and on that account, if required with much carving and mouldings, would be more expensive in the end than the easily-worked sandstones, whose initial cost in the rough, with added freight, is considerably higher.

The most common form of limestone front usually consists of the basement above the ground, of rock-faced twelve-inch ashlar courses, finished with a chiselled base course. From the basement to roof, rock-faced shoddy courses of varying thicknesses, two courses to the foot are employed, relieved with trimmings of chiselled bands, lintels, sills, quoins, etc. It is owing to the quality of the shoddy courses that limestone fronts are in such disfavor. When quarried, they are of a deep bluish slate color, but this in a very short time, owing to the presence of oxides, gives place to a rusty appearance, intensified with age; till the front assumes the shabby depressing look we are all so familiar with.

The only reason for using such shoddies is on account of their cheapness, for, lying in beds of varying thicknesses, none over seven inches, and at the top of quarries, they are easily obtained. The pure gray unfading limestone, cut down to these same thicknesses, cost only 75c. per yard superficial more than this bastard stuff. Anyone examining fronts

where the rusty colored stone is in evidence, will notice that the same appearance is never present in the twelve inch courses, in the basement of the same building, except in a very few rare cases where shoddies are used as a veneer turned on ends and not on their natural quarry beds.

To hide discoloration in the shoddy courses some stain the surface with a wash of lamp-black, but the funereal appearance produced can scarcely be called an improvement. Limestone from Terrebonne is sometimes used for residences, although principally for engineering works and large buildings, where heavy blocks are required. The Ogilvy Dry Goods Store on St. Catherine Street, is built of this stone. Limestone from Deschambault, a district a few miles west of Quebec City, also competes with the stone from the Montreal quarries, and is of a much lighter shade. The dwelling belonging to Hugh Graham, Esq., at the corner of Sherbrooke and Stanley Streets, is a good example of this stone.

Sandstone fronts afford a pleasant relief, and break in the monotony of residences. The best effects are often obtained by employing together two kinds, the contrast produced by dressed work against rock-face stone of the same color not being so striking as similar treatment in limestone, and therefore two colors are preferred.

Some varieties of sandstones being of a very porous nature, take up a great deal of moisture and are easily streaked with soot stains, washed from sills and string courses. Many of the coarser kinds even become

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moss coated after a few years. The subject of the prevention of staining from rainwater and soot agencies to the fronts of buildings is one to which very little attention is paid, and although it would be invidious to particularize any prominent buildings as having had little thought bestowed upon their drips, "he who runs may read," there being multitudes of offenders.

The ordinary way to throw the water clear from a moulding or sill is to cut a chase or "throat" along the bottom. This, however, is very seldom cut sufficiently wide and deep enough to do its duty, and capillary attraction being then stronger than gravity, the water flows across the shallow groove and down the face of wall. The best means to prevent this, and one very efficacious, is to cover the whole top of projection or moulding with tinned copper turned over, and leaving a good sharp drip, one inch or more away from stone. Where motives of false economy will not allow of this small extra cost, a short drip of the same material should be made on the lower bed of stone.

The following notes on stones may be helpful to those undecided as to a choice of stone to use in a front.

Sandstones vary from comparatively soft and easy to cut to some that are very hard and difficult to work. Those used in Montreal come from Ontario, New Brunswick and Nova Scotia, Ohio, Connecticut, New York, England and Scotland. The principal sandstones from New Brunswick and Nova Scotia are those known as olive green, varying in color from a greenish gray to yellowish green, examples being a residence

corner Elm Avenue and Sherbrooke Street, stores of A. Joyce and Henry Birks & Sons on Phillips Square, R. J. Tooke's, corner St. Catherine and Peel Streets, and residence of the late Duncan McIntyre, Esq., Drummond Street. Among some good blue stones are those from Wallace, N.Y., a specimen of which is the building on St. Catherine Street occupied by Chas. Lindsay. There are also red and brown sandstones, such as the Amherst red and Woodpoint brown. Of the Ontario sandstones, the purplish brown from the Credit Valley is best known. This is a fine grained hard stone, and is largely used in St. James Methodist Church and Lord Strathcona's residence on Dorchester Street. Another stone is that from Perth, Ont., a quartzite of the Potsdam formation, the first story of the J. C. Wilson's Co.'s warehouse, Craig Street, and the residence, 265 Bishop Street, are built of this stone.

Of sandstones from the United States, the Connecticut brown stone is used in the Standard Life Building on St. James Street. The Ohio buff sandstone has stood the test of forty years' exposure to the weather in the trimmings and fine carved work of the Parliament Buildings at Ottawa. That from the Grafton quarries has been used, among other buildings, in St. George's Church tower, Dr. Campbell's two houses, corner Sherbrooke and Crescent Streets, and the Montreal Diocesan Theological College. The store occupied by Chas. Alexander on St. Catherine Street is built of the Grafton blue sandstone. A handsome blue stone, but unfortunately very expen-

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sive, is that used in the Canada Life Assurance Co.'s building, corner St. Peter and St. James Streets, and comes from New York State, south of Rochester.

The English and Scotch red sandstone all work more or less freely, and are of a rich warm red color. They have been used for the following, among other buildings, New York Life (Gatelaw Bridge), Board of Trade (Moat), Temple Building (Ballochmyle) and Henry Morgan's store (Corsehill). A Scotch buff sandstone has been used in a few buildings, among them the trimming of the Nurses' Home in connection with the Montreal General Hospital.

A recent importation of Bathstone of the oolite formation, and cream in color, is employed in two buildings at the foot of Argyle Avenue, Westmount, and trimmings to a store on Phillips Square.

Granites are not much used here for buildings, the principal examples of the red being basement of Board of Trade Building, Nordheimer's Building, a residence corner Dorchester and Aqueduct Streets. A very durable and cheap granite from Argenteuil, Que., is used in a block of stores on Notre Dame Street, west of Seigneurs Street ; and there is also a very fine grey granite from Stanstead, Que., used in the basement of the Merchants Bank of Halifax, corner of Seigneurs and Notre Dame Streets. The approximate prices of stones in rough blocks on wharf or cars, Montreal, freight and duty paid, are as follows :—

English and Scotch red sandstones—

English and Scotch.. . . .	65 to 70c. per cub. ft.	
Buff.. . . .	65 to 70c.	“

Nova Scotia and New

Brunswick olive green ..	60 to 80c. per cub. ft.	
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Blue stones	60 to 75c.	"
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Nova Scotia and New

Brunswick brown stones.	80c. to \$1	"
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Grafton (Ohio) buff stones	85 to 90c.	"
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Grafton (Ohio) blue. . . .	70 to 75c.	"
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Credit Valley, Ont., brown stones	70 to 75c.	"
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Portage (N.J.) blue stones..	\$1.00 to \$1.25	"
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Connecticut (R.I.) brown..	\$1.30 to \$1.50	"
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BRICKWORK.

The use of brickwork of an ornamental character has received a wonderful impetus since the establishment of pressed brick yards in the immediate vicinity of Montreal and in various other parts of Canada within easy reach of the commercial Metropolis. A large amount of capital has been spent in experimenting, and now, with the possession of the most improved machinery for making, and down-draught kilns for burning, the yards are capable of turning out immense quantities of bricks in all shades, and as near perfection as any made on this continent.

Pressed brick is a material which lends itself peculiarly well to picturesque effects, both in form and color, and with the further desideratum of cheapness, leaves no doubt of its steadily increasing in popular favour. Its use, however, in this climate should

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be restricted to plain surfaces. Some Architects, in the exuberance of their fancy, have built up whole fronts with bands, ledges and projections every few courses, quite forgetting the fact that rain, snow and soot, without mentioning the ubiquitous sparrow, will, in the space of a few short months, cause the building to be anything but "a thing of beauty and a joy forever."

Terra cotta in all forms, and notably in panels modelled in various reliefs, is very much in demand for use with brickwork, and also such stones as Miramichi olive green and the purplish brown Credit Valley. All stone, however, where used with brick, should be well washed and brushed, as the fine dust on their face made in cutting is invariably washed down the surface of the brickwork. Especially is this the case with the Miramichi stone. The remarks in the previous chapter, recommending the tinned copper lip being placed under stone sills, etc., will apply very forcibly when such sills are used with brick, more especially with the buff brick fronts, the soot stains being particularly noticeable in some of the few erections in that material in Montreal. A matter which militates somewhat against the use of brickwork is the appearance of a white efflorescence on the brick, which has baffled all the skill of the brickmakers to prevent. This, however, wears off in time.

The practice of coloring the surface of bricks after laying, and "tuckpointing" or raising a false joint to the work, is now common in this country, but cannot be said to be in accord with the true canons of

Art. It may be in a degree permissible to use such artifices in renovating old work, but must be condemned when used in new. A ruled joint, or one struck with the trowel, as the bricks are being laid, in red, white or black mortar, is the only correct method, and one giving the natural soft color of the brick. It may not be generally known that a brick wall is not wind-proof, and too much care cannot be taken in "pargetting" with mortar the inside face of the hard brick veneer while building and in back plastering the walls before the furrings are put on to insure a warm job. The incorporation in the wall between the veneer and the rough brick backing of tarred felt is a still better protection.

In building chimney flues in exposed positions, crushed mica or asbestos mortar well filled in around the tile lining will go far to insure a good draught to a chimney. In all cases chimneys should be taken up at least three feet above the highest point of roof. If the adjoining buildings are loftier, the chimney must be taken up the same distance above them. Where the house is at the end of a row or street corner, and liable to wind flurries and eddies, a stoneware wind baffle should be placed on top of the chimney, which in most cases proves efficacious.

CARPENTER AND JOINER'S WORK.

Upon the manner of carrying out the carpenter's work, is determined, in a large degree, the wearing

qualities of the house, unseasoned lumber and poor framing of the skeleton structure inevitably bringing a train of evils. Now that steel is so cheap, costing barely \$40.00 per ton delivered on site, its use is coming more and more into favor, and instead of the cumbersome wooden run beams and posts, which were so liable to shrinkage and dry rot, we now have the smaller and lighter steel work. Too little thought is usually given to the subject of the shrinkage of wood-work when erecting the framing of the building. The joists and studding are often put up of material which has had little if any seasoning, with the result that when the house is finished and occupied, and the furnace commences its work, the timbers shrink and the plaster inevitably suffers; in fact, the new house is practically a wreck after the first winter. It has been ascertained by experiment that wood in its green state is scarcely more than one-half the strength attained when seasoned. A bearing partition coming upon the middle of a moderate span of joists, will cause an appreciable and permanent deflection that would not occur on seasoned joists of the same span. The amount of the shrinkage to wood in length in seasoning is infinitesimal, so that in practice may be disregarded, but in its transverse direction is very considerable. A pine joist, twelve inches in depth, by the process of seasoning, will shrink from one-half to five-eighths of an inch. Anyone visiting a building in process of erection, and examining the tier on tier of partitions, resting on rails and joists, will readily see the elements that are too often responsible for

broken plaster ; in some cases as much as three feet of joists and rails in a green condition have to be accounted for in transverse shrinking, which would mean a settlement of something like two inches when dry. It is almost out of the question to obtain thoroughly seasoned joists and studding, and the damp incidental to building operations must always be reckoned with to swell the dry material. Every expedient must, therefore, be employed to counteract this condition of things. Where a stud partition comes immediately over another bearing partition, the feet of the studs should rest on the rail of the lower one in common, and not on a separate rail laid on the joists, thus saving a half-inch of shrinkage. At the same time, it will not do to make one partition practically non-shrinkable, and a parallel one in an unfavorable position shrinkable.

As soon as the bearing partitions are up, it is advisable for the proprietor to go over the arrangement of rooms with the Architect, as slight alterations at this stage can be easily effected.

After the plastering is finished, plenty of time should be given to drying it out, which must not be too fast. Too much stress cannot be laid on the necessity of delaying putting on the finished joinery work to the house till the plaster is bone dry. To hurry the placing of the woodwork before this stage is fatal to obtaining a first- class job. The finished floors should be laid over the rough floor with tarred or plain felt between. Some do not care for the tarred felt on account of its odor when the house is heated, and the

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danger, too, of a chance leak from hot water pipes mixing with it, causing a yellow disfigurement to the ceiling impossible to remove ; but by others the tarred felt is preferred, being considered a preventive of moths attacking the carpets. Maple or birch makes a very durable floor ; the former should always be used in the kitchen and places where there is much traffic: If the expense is considered too great to put down hardwood floors throughout the house or to the ground floor, hardwood borders composed of one and a-half inch strips might be used for one or more of the principal rooms, the cost not being a great item. Always nail to the floors at foot of skirting or base boards an angle bead to hide any shrinkage of the floor ; the concave angle-beads as used in hospitals are preferred, being more easily swept. The quality of wood finish will make or mar the impression of a well-built house. Doors with split panels, architraves with open mitres, shrunken and ill-fitting windows, etc., go far to give a general sense of dilapidation hard to remove, however well executed the other trades may be.

The kind of wood most commonly employed in the finishing is pine, either for painting or left natural. Whitewood or Cottonwood costs very little more than Pine, is close grained and almost devoid of knots, and used very extensively in medium-class houses. Cypress is another close-grained wood and a favorite finish in Boston. Butternut a few years back was very popular in Montreal, but has now few friends, its good qualities not being commensurate with its cost.

Quarter-cut sycamore is a very beautiful wood, and makes a rich finish, but on account of its warping and twisting proclivities, should never be used solid for doors, the stiles and rails of which should be built up of sycamore veneer on pine or cottonwood. Oak and cherry are always in demand for first-class houses, and so well known as to need no comment. Birch is a fair finishing wood, and generally used in the hand-rail, balusters and newel posts of staircases. Cedar makes a good panelling for wood ceilings, but is too treacherous for the finishing of a home ; it cannot be carved and is easily "shaked" and slivered on the "arrises" or angles of the work. Ash is very open-grained and beautifully figured, but very liable to warp ; it, however, makes an admirable wainscotting in places exposed to hard usage, such as kitchens, nurseries and back-stairs.

It is always money well invested to spend some fifty or seventy-five dollars extra over the cost of Pine to finish the ground flat in hardwood. On no account have anything trashy, such as composition ornament stuck upon the woodwork and grained over to imitate carved wood. If you cannot afford real carving, do not perpetuate a fraud ; what little you have of anything let it be genuine. It is always advisable before building to jot down notes of anything special that you want done in this trade, and have them incorporated in the specification, this will obviate irritating extras afterwards. Such things as the number of shelves and drawers wanted in the linen closets and presses, medicine closet (if required) in bathroom

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style of kitchen and pantry cupboards, if spaces for a barrel of flour or sugar are to be provided in same or marble slab for pastry, or if fly-screens are wanted for windows, clothes-line pulleys and posts, etc. As a rule, Architects specify the quality and price of all the hardware required; but such is not a practice to be commended. A much better plan is to state that the proprietor will provide all door and window furniture of a selected character, in the nature of locks, bolts, window fasteners and lifts, hat and coat hooks, brass or bronze hinges, if any, etc., etc., the Contractor to fix same and to provide the rest of the hardware, such as nails, screws, straps, hinges, staples, sash weights and cords, sliding doors hangers, etc. In this way there can be no dispute as to the value of the articles, the proprietor having freedom in the selection and not hampered by specified prices. Be sure and choose first-class hardware, it is a "penny wise and pound foolish" policy to buy cheap stuff.

At this stage it may not be considered out of place to give a little advice for the prevention of that insidious disease affecting wood—dry rot. Probably twenty-five per cent. of the old basement houses of Montreal and indeed quite a few of those built within the last ten years have been gripped in the octopus clutches of this fibre-destroying fungus. The conditions obtained in the old style of houses without concrete floors insure a perfect hot-bed for the growth of dry rot. The floors are laid on half-buried sleepers with no ventilation between, and being damp, causes the growth whose fell work sooner or later is apparent. The delicate

tendrils of the fungus once getting a foothold, spread through the fibres of the woodwork attacked with remarkable rapidity, and what was sound material is soon sapped of all strength, although to the eye no change can be detected. The writer has lately been called to examine a number of cases. In one instance the house had been built four years, sleeping beams under the basement floor had started the trouble, nearly the whole of the beams and floor were destroyed and the ash wainscotting to the walls of the kitchen could be broken by the mere tap of the hand. Another house had been built five years, the spaces between the half-buried beams were filled with cement, thus further aggravating the trouble. In this case the whole three flats of the house were sinking, the ends of the stud-bearing partitions in basement having been eaten away by the rot. In another place a new floor had been laid on an old one which had shewn signs of decay, and one short year had been sufficient to destroy it. In all cases there was no ventilation beneath the floors, and linoleum coverings had formed a hermetical seal. Sawdust between roofs which periodically leak is another fruitful source of this trouble. When once a house is attacked, the only remedy is the surgeon's knife, or rather, the carpenter's axe and saw. The whole of the woodwork of floor and partitions showing the slightest taint and the apparently sound for some distance around must be rooted out and the conditions changed. Basements must first have the whole floor surface covered with concrete and

cement, and when dry, tarred or covered with tarred felt, then two by one-inch strips or furrings should be spaced at intervals of about two feet, and the floor nailed to same. Through ventilation can then be effected from the outer air by introducing small iron piping directly through walls of house, both front and rear. "Vulcanite" or asphalt would do even better than cement for the flooring, and need not be tarred or covered with felt before the wooden floor is put down.

ROOFING.

The importance of a perfect weather-proof covering to the home is well understood by the Montreal householder. In no other part of the world are more severe conditions met than we have to provide for in this climate.

The best form of a roof to a city residence is unquestionably the dished or "hopper" roof. The ceiling joists are first covered with tongued and grooved boarding, and afterwards with 2 or 3 ply of felt; the "hopper" roof is then formed with 4in. x 3in. scantling and roofing boards with a fall to a branch of soil pipe. Felt of seven or ten ounces to the yard and lapped to make three or four thicknesses, is then laid, each ply being well swabbed with resin cement before its successor is applied, and well turned up to height of firewall and round skylights, chimneys, etc. A copper-flanged tube four inches in diameter is then inserted in the branch from soil pipe and the flanges

well nailed to roof. The whole is then covered with a flowing coat of resin cement and the gravel laid. To prevent the stones and debris being washed into soil pipe, a globe-shaped galvanized wire guard is fixed into the mouth of the copper tube.

The felt must not be cemented to the roofing, in order to allow of free expansion and contraction.

A difference of opinion exists as to the propriety of ventilating the space between the ceiling lining and the roof. Some prefer no ventilation, so that there being no circulation of air, the dead air space would afford a good non-conductor of heat, which in both summer and winter is a desideratum. The little heat that passes from house to roof, even if sufficient to melt the snow, would do no harm, as it would drain to soil pipe. Others believe in thorough ventilation from front to rear of the space, and leave several openings for that purpose. In that way they claim the snow will not melt and the wind will carry it off. Even if this were so, it would not compensate for the loss of heat to the house by the current of cold air passing over the ceiling covering.

The quality of the resin used varies considerably, some roofers displaying great ignorance in its making, incorporating with the pure resin large quantities of pitch, the result being that the modicum of oil in the pitch is soon evaporated, leaving the whole mixture in a brittle and crumbly condition.

Black oil or tar with a sufficient proportion of resin to prevent the summer heat melting and thinning the mixture alone should be employed.

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Plastic asphalte roofing, patented by Messrs. George W. Reed & Co., makes a very good roof for places where no gravel is required. The best form of mansard and pitched roofs to prevent icicles forming at the eaves is known as the "double roof." The first roof is covered with two or three ply of felt cemented over with resin and made perfectly tight. On this is laid another roof formed of scantlings laid on their edge, boarded over and covered with slate, galvanized iron, etc., as the case may be. The air space between the scantlings is left open at the foot of roof, and at the ridge ventilators are placed to allow of free circulation. The heat of the house is thus prevented from reaching the upper roof and melting the snow, which is easily blown off the slope of roof, so that there are no conditions to form the dangerous icicles.

Slate makes the most durable roof covering when properly laid for Mansard fronts and high-pitched roofs. Some roofs of this material in Montreal have been in existence over forty years. The black slate obtained from the quarries at Rockland and other places in the Province of Quebec is most commonly used, and for strength and toughness is not excelled by any imported slate.

Red slates, as used on the residence of R. Stanley Bagg, Esq., corner Sherbrooke Street and Cote de Neiges Rard, and the green slates on the front of Alderman Sadler's residence, Crescent Street, make very effective roofs for sandstone houses, but it is very poor taste to use them, as some do, in chequered or other alternating patterns and devices, with the

dark slate. To make a really first-class job, the upper corners of slates should be trimmed for even laying, but this method, although costing only fifty cents per square of 100 ft. more, is very seldom adopted now. Galvanized Canada Plate laid diagonally block seamed (no solder being used) is now becoming much in demand, and is really a very fine roof for this Province, and not requiring to be painted, is much superior to the ordinary Canada plate roof.

Aluminum sheets laid in the same style as Canada plate is also bidding for popular favor. It makes an exceedingly light covering, but its wearing qualities are an unknown quantity. Copper roofing, as used on the residence of the late Duncan McIntyre, Esq., and residence on corner of Dorchester and Matthew Streets, has an extremely rich effect even when tarnished, and there is no doubt of its everlasting durability. Copper at the present time is very low in price, and although too expensive for medium class houses, as a roof covering should be used extensively for flashing purposes in the place of galvanized iron.

No arguments can be too strongly urged against the revolting practice of erecting false wood fronts and packing box towers propped up and stayed from behind, and covered with galvanized iron fearfully and wonderfully made into wedding cake ornamentation which the disordered fancy of the speculative builder fiend so much delights in.

The following current prices of roofing are given to show the relative values of the different coverings :—

Resin cement, 4-ply, 7-oz. felt, \$3.50 per sq. of 100 sup. ft.

Resin cement, 4-ply, 10-oz. felt, \$4.50 per sq. of 100 sup. ft.

Plastic Asphalt, 4-ply, 7-oz. felt, \$4.00 per sq. of 100 sup. ft.

Plastic Asphalt, 4-ply, 10-oz. felt, \$5.00 per sq. of 100 sup. ft.

Galvanized Canada Plate laid diagonally, \$6.50 per sq. of 100 sup. ft.

Aluminum laid diagonally, \$15.00 per sq. of 100 sup. ft.

Galvanized iron, \$9.50 per sq. of 100 sup. ft.

Copper, \$24.00 per sq. of 100 sup. ft.

Rockland Slate, 1st quality, \$7.00 per sq. of 100 sup. ft.

Rockland Slate, 2nd quality, \$6.00 per sq. of 100 sup. ft.

Green Slate, imported, \$10.50 per sq. of 100 sup. ft.

Red Slate, imported, \$14.00 per sq. of 100 sup. ft.

PLUMBING, HEATING, ETC.

When we consider that more than two-thirds of the lifetime of a city resident is spent under a roof, the importance of pure air and hygienic conditions is apparent, and there should be no need to impress further the very obvious necessity of good sanitary arrangement in our homes. Although at the present time, it is a debatable question whether sewer gas—the component parts of which are carbon dioxide, marsh gas and sulphuretted hydrogen—generates the disease

germs of diphtheria, typhoid fever, etc., there can be no doubt that if not the direct cause it predisposes to disease by lowering the vitality, and therefore it behooves us to fight and keep it out of our homes as we would our arch enemy. The system generally adopted in Montreal is to lay the soil pipe from the sewer in street to two feet outside the front wall of house in glazed stoneware socketed pipe, and from thence of cast-iron pipe without any trap through the house, and carried two feet above the roof. This insures free ventilation of the main sewerage system, the gases generated in the sewers being carried off above the dwelling. The various fixtures, such as w.c., sink, bath, wash basin, etc., etc., are each trapped and connected to the soil pipe by separate fittings, all the traps being back vented by from two to four-inch pipes to prevent syphonage, and therefore the loss of the water seal. The Old Country system of putting a trap between the house drain and sewer is also allowed by the Board of Health, conditionally, "that such trap shall have a hand hole for cleaning purposes and a fresh-air inlet pipe." This has been adopted somewhat extensively, and although well enough in its way in summer, is positively dangerous in the winter. Anyone passing along St. Antoine Street will notice on examination, where this system is adopted, that nine out of ten of the bends to the fresh air inlet pipe in winter are stuffed with paper to keep the frost from freezing up the drain. The result of such abuse of their functions must be disastrous to the fixtures on the lower flats, the back pressure from the air dis-

placed by discharges of water from above would of itself be sufficient to break their seal.

So much for an innovation introduced without taking into account the nature of the climate.

The city by-laws only provide for a peppermint, smoke or air test to prove the tightness of the joints and freedom from airholes to the soil pipes and fittings. These are not sufficient, and a clause should always be inserted in the specification requiring a water test, which is effected as follows : the ends of all fittings and at the lowermost cleaning eye are plugged and the whole extent of piping filled with water from roof level. It should then be allowed to stand at least twenty-four hours. The pressure of water will insure the discovery of air holes and cracks in the soil pipes covered over with the tarred coating and any defective joints. The writer recently water tested the soil pipes of a dwelling, not being satisfied with the smoke test previously given, and found only some five or six joints in the whole system from which water did not percolate.

Although the requirements of the by-laws are met by the placing of one cleaning eye for access to clear any obstruction in the drain in basement, an additional one should be put at the back of each branch connection and one near to the base of vertical soil pipe stack and another just inside wall where drain enters building. They should be formed of upright Y branches or fittings arising in the opposite direction to fall of drain for easy entrance of a cleaning rod ; a

brass ferrule, with screwed eye to take off, being caulked and leaded into the open end.

In laying the tile drain from outside wall to sewer, the joint of each pipe should be made with Portland cement and scraped clean on the inside, unless the latter is done, the cement will protrude on the inside as the spigot of each tile is inserted into the socket of the other, and form a solid ridge, sometimes diminishing the area of the pipe one-half. Such, indeed, was the condition of affairs found recently when taking up the drain of a newly-built residence, to connect a yard gulley.

Although the city authorities will allow "other approved devices" instead of back-air vent pipes to prevent syphonage of traps to fixtures, it is inadvisable to do so, and especially in the case of kitchen sinks, where patent traps are sometimes used. The arrangement of such traps sooner or later clogs up with grease, and the passage gradually assumes the shape of a common "S" trap, and not being back-vented, is useless. Sink traps, however, should be cleared of grease periodically, but this is seldom done unless for an actual stoppage. Many basements are provided with "bell-traps," to allow the draining of any surface water from the floor. This arrangement cannot be too strongly condemned, it is against the law and little less than criminal folly, the seal of the trap being most of the time dry and affording free entrance for sewer gas. Before deciding on the plumbing fixtures, a few of the show rooms of plumbers' supply

houses, where the fixtures can be seen set up, should be visited and a selection can then be made.

For hot and cold water service, only two kinds of pipes had better be used, lead for cold water and copper for hot water. Lead pipe is most commonly used for hot water, but is a source of endless expense, especially in localities where the water pressure is high, the expansion and contraction to the pipe from hot water under pressure weakens the pipe, and bursts become common. Galvanized wrought iron pipe has been tried, but has one very serious failing, the expansion of the pipe causes the coating to peel off and exposes the plain iron. Clothes washed with water from the pipe become "iron-moulded."

The kitchen boiler is generally connected up with the furnace, range or gas generator with wrought iron pipe, both plain and galvanized, but sometimes becomes choked up with rust settling at the bottom. It is, therefore, advisable to use copper for this purpose also.

In some localities the water pressure is very high, and causes lots of trouble. This can be regulated by the use of a "Governor," which will very soon pay its cost by the saving of repairs.

The illness from lead poisoning of a whole family who had just moved into a new house in the spring was recently investigated, and very useful and interesting facts brought to light. Some water from the lead service pipe, which was about one hundred feet in length, was analyzed, and found to contain considerable traces of a poisonous salt of lead caused by

the action on new lead pipes of carbonic acid in solution. This acid is known to exist in the water of the Ottawa River, and very strongly in the early spring. In the winter a dam of ice is formed at the head of the Island of Montreal below St. Ann's ; this, and the great cold in the north reducing the flow of the Ottawa River, causes the larger part of the water to find its channel at the back of the Island. The St. Lawrence River water then forms the bulk of the supply at the intake for domestic use, and the presence of sulphates in solution in that water acts on the lead, and forms a coating of an insoluble salt of lead, thereby protecting the pipe, and no trouble is experienced afterwards. It is advisable, therefore, for some time after entering a new house, especially in the months of April and May, to run off every morning the water standing in the pipes over night.

Where practicable, plumbing pipes should be exposed or boxed with movable cover for easy access, and where the soil pipes in basement or cellar are below the ground, the Architect should supply the proprietor with an accurate plan of same for future reference.

It is desirable, even if it be proposed to use electricity for lighting purposes, to pipe the house for gas in case of accidents to the lighting plant, at the present time so common. The locations of the outlets should be arranged with great care. A good rule to be observed for the brackets in bedrooms or where only one light is used, is to place them near the window ; the natural and artificial light is then obtained from one direction. The arrangement of the coils or radia-

tors for hot water heating apparatus must be well considered and laid down on plan, so as not to clash with the positions assigned for the necessary articles of furniture. The places most likely to be cold in the rooms, on outside walls or underneath windows, should be generally chosen.

There is no difference in cost between wall coils, box coils, or standard size radiators, but "low down" radiators, suitable for placing under windows, are considerably dearer. The seat of box coil covers must be made slatted, and never solid, and the fronts fitted with brass wire or wood lattice.

Some Architects specify the number of feet of pipe equivalent required for the radiators and coils of each room, so that the contractors are placed on the same footing when tendering. It is better, however, to state that such figures are the minimum, and that contractor must guarantee to heat all parts of the house simultaneously to, say, 65 degrees when the thermometer registers 20 degrees below zero, otherwise should the house be too cold in some rooms, the contractor could submit that he had put in the amount of pipe his contract called for and was not further responsible.

A badly-carried out or bungled scheme, giving a poor circulation, cannot be anything else but a failure, whatever the amount of piping may be used, success in heating and quick circulation being only obtained by the skilful laying out and execution of the work according to scientific rules.

For the economical running of a hot water system

it is always best to use a size larger furnace than is actually required, a thinner bed of coals giving more perfect combustion than a thick one of smaller area.

ON WIRING THE HOME FOR ELECTRICITY.

Until quite recently the wiring of houses has been done in a very slipshod manner, and in many cases being the cause of incipient fires. The Canadian Fire Underwriters' Association are now strictly enforcing a thorough inspection of all installations, and require a Certificate from Mr. Badger, the City Electrician, that work is done according to their rules. The main points to be observed in wiring are as follows: the wires immediately on entering the house must have a safety cut-out and double pole knife switch, both mounted on non-flammable bases, such as slate or porcelain. After passing through the meter the wires should run to a centre of distribution (generally a cupboard, if conveniently situated) which supplies a bank of safety branch cut-outs. From these cut-outs are taken circuits necessary to feed the outlets for fixtures, a cut-out being required for about every six lights. The cut-outs are for fire protection, and in the event of any wires on the main or branch circuits coming in contact with each other, called "short circuiting," the fuse in the cut-out would melt and shut off the current from that section before the wires could get dangerously hot to do any damage.

The main switch is an extra safeguard. Opening

this, the current can be entirely cut off from the house, which should always be done when the house is unoccupied or during a heavy electrical storm. All wires must carry the full complement of lights simultaneously, with not less than 2 per cent. loss at any lamp. In arranging for the outlets for fixtures, the general scheme for gas lighting should be followed, but supplemented by many conveniences which the altered conditions will allow, such as ceiling corners and clusters and in numerous other ways that the imagination can suggest. Receptacles for attaching cords should be placed in skirtings or other suitable places for portable lights, parlor lamps, curling tongs, and hot water heaters, not forgetting even the very neat substitute for the hot water bag.

It is always advisable to provide plenty of switches, the cost being very little and their utility beyond question. Switches for bedrooms should be placed on the door architrave on the inside of the room, where light can be turned on, on opening door, and on the outside of doors for living rooms. Cellar lights should be controlled by switch from head of stairs, and the entrance hall light by two switches, one at vestibule door and the other in the first floor hall.

ELECTRIC BELLS.

All wires should be rubber covered, and on no account less than No. 16 "Brown & Sharp's" wire gauge. Poor covering and small wire has been a

source of great trouble in the past. The positions of annunciator, buttons and bells should best be determined by the mistress of the house, but usually the push buttons are placed beside lighting switches, excepting the dining-room, where a flush floor receptacle should be placed in the centre of room with removable flexible cord and table clamp attachment. When the front street door push rings on the annunciator, it should operate a bell to be heard when kitchen door is closed or at night time, with switch attachment to cut off same when not required. The batteries should be placed with some consideration (not under a sink to be forgotten or destroyed, but in a fairly cool place easily accessible). Electric work of all kinds must not be intrusted to plumbers, but should be given to reliable firms doing such business exclusively.

PLASTERING.

Although the plastering of a house is so often unsatisfactory, cracks and peelings in a greater or less degree making their unwelcome appearance, the first winter after completion of the work, it is not always the fault of the plastering, the shrinkage of the wood-work and settlements being more usually the cause.

The method of executing the ordinary three-coat work is to run the mortar, composed of fresh burnt lime, river sand, and long ox or goat hair in a pan, and turning it over once or twice before being required for use. After lathing, the first coat of mortar is applied

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and scratched to form a key for the next coat. When perfectly white and thoroughly dry, this receives the second coat, which is "straightened" up to an even and true surface. The final or "putty" coat is composed of lime, plaster of Paris and a little sand.

There are no fixed proportions for mixing plastering materials, the nature and quality of the lime, etc., ever varying, it is a matter of experience, although, unfortunately, oftentimes of rule of thumb. Plasterers, like the Doctors, differ, and not being able to analyze, chemically, the ingredients or the changes they undergo in "slacking," have no unanimity of opinion as to procedure.

Some run the mortar only a day or two before using, others two or three weeks, and none adopt the good old-fashioned way of making the mortar months ahead.

Upon the conditions of drying depend largely the satisfactory carrying out of the work.

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In the summer each coat of mortar must be dried very slowly—in fact, the slower the better—and no hot dry winds allowed to blow through the house. Heavy cotton screens should be placed over the window and outside door openings. Some prefer using shutters, but these permit a too free circulation of air. Never leave the windows open unless in damp or rainy weather. In winter the first two coats are dried with coke furnaces, and if not too hurriedly or incautiously, the plaster will be extremely hard, the surface forming a carbonate of lime from the coke fumes. If, as will sometimes happen with careless placing of the

furnaces, the second coat is scorched or smoked, the finishing coat will not adhere, and in a short time will peel. The same result will follow if the second coat is not sufficiently dried out.

Wooden angle beads are generally fixed to all projecting corners of walls and chimney breasts before plastering to protect the finished work ; but where in first-class houses beads would be considered a detriment to the sharpness of the corners, the latter are run square in Keenes' cement, costing about 30 cents per lineal foot.

Cornices and plaster ornamentation is a cheap and legitimate decoration where tastefully applied. Plain cornices, 12 inches in girth, cost about 10 cents per lineal foot, others in proportion. Small panel mouldings, 7 cents per lineal foot. (Each mitred corner to cornices and panel mouldings is counted as one foot extra.) Friezes in relief (stock patterns) cost $\frac{2}{3}$ rds. of a cent per lineal foot for each inch in height. Special designs, modelling and moulds, extra. Centre flowers cost 60 cents for each foot in diameter. There are many kinds of plastering materials upon the market. Cements, such as "Acme," "Adamant," etc., all more or less made on the same base, are very good substitutes for the ordinary plaster, while the use of "Asbestic," a fireproof material from the mines at Danville, P.Q., is rapidly coming into favor both at home and abroad.

Plaster board nailed on to the partitions, without lathing, and only receiving the final thin finishing coat "in situ," is another recent improvement, one of its

features alone—its freedom from moisture when being applied—making it very valuable.

PAINTING AND GLAZING.

It is popularly supposed that the painter's work hides a multitude of sins committed by other trades, particularly the Carpenter ; and, indeed, there is some truth in it. At the same time, it should be quite understood that if the woodwork is poorly put together or unseasoned, no amount of skill on the part of the painter can make a first-class job of it. The painter is very much handicapped by being the last workman in the building, and it so often happening that his work is hurried through the delays of others in not completing their work on time.

The usual method of painting outside woodwork is to first cover the knots with shellac to prevent the turpentine from exuding, then giving a coat of priming of white or red lead and linseed oil, and after stopping up the nail holes with putty, putting on two or three coats of linseed oil paint. The inside finish is treated similarly, but greater care is taken to rub down with sand paper between each coat, and where a dull finish or egg-shell gloss is required, turpentine with very little oil is used. The pigments for coloring are in some cases artificially made, but for such colors as ochres and umbers natural earths are used, finely ground down and mixed with as much white or red lead for a base as they can stand. Iron-work

should be painted with oxide of iron, graphite paint or asphalte varnish. The best time of the year for painting outside work is in the late fall, the winter giving the oil a chance to harden before the power of the sun is felt. A good plan to insure the covering of all surfaces with paint, and to check the number of coats applied, is to specify a distinct color or shade to each successive coat. When an ordinary varnished natural wood finish is required, the work is first oiled with linseed oil and afterwards shellaced and varnished two coats. If the work is to be rubbed down or polished, the open-grained woods, such as oak and ash, require a coat of a "filler" colored or otherwise followed by shellac sandpapered to a smooth finish. Hard oil or rubbing varnish is then applied in two or three coats, rubbing first coats with hair cloth, and the last with pulverised pumice stone and a raw linseed oil, or for a dull finish with pumice stone and water.

Care should be taken to have no dust about and to see that each coat is thoroughly hardened. Close-grained woods, such as white wood or cottonwood, do not require filling, and are so easily made to a smooth finish, that it would be advisable in the ordinary varnish work to rub down the last coat with rotten stone or pumice stone applied with flannel, the small extra cost being money well spent. Hardwood floors are generally left twice oiled. Papering, tinting and decorating is hardly ever satisfactory when done at the time the house is building, and had much better be deferred until at least a year after it is built. The walls will then have had time to settle and cracks in the

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plaster will have asserted themselves ; a better idea, too, can then have been formed in the owner's leisure for a scheme of decoration.

In ordinary glazing to windows, star, diamond star and double diamond star glass is used. Star glass is the common sheet glass ; diamond star is of same thickness, but of selected quality. These are generally used for winter sashes. Double diamond star is similar in quality to diamond star, but about double the thickness, and is used for summer sashes.

Plate glass to the principal windows adds very much to the appearance of a home. The extra cost over ordinary glazing is about forty cents per foot.

Leaded glazing ranges in value from sixty cents per foot for rolled Cathedral glass in quarries or squares, suitable for fanlights over bedroom doors or ceiling lights, to five dollars per foot and upwards for figure art glass. Two dollars per foot is a fair average price for art glass in vestibule doors. No home is complete without a little good art glass, however sparingly used. Be sure and insist upon a clause being put in the specification for the painter to clean and remove all paint spots on the windows at completion. This will insure more care being taken with the work and paint put in its right place.

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CONCLUSION.

The foregoing pages, while not going very deeply into the subject of house-building, will, it is hoped, prove food for thought in the right direction, and add something to the meagre store of ideas intending builders usually possess when starting out to erect a home of their own. It was thought best to limit the scope of the chapters on the various trades to a bare statement of some of the principal items most likely to be met with in building. There will, of course, be found many points briefly, if at all, touched upon, and others more fully than their importance may be considered to merit. To cover the ground other than superficially would far overstep the limits of this little book, and might be found tiresome reading.

The Architect employed will, in making his specification, particularize each individual requirement fully, and the proprietor should go over same very carefully and have the various points explained to him.

The subject of styles for the design of the home has not been gone into, it being deemed the wisest course to leave such consideration for the Architect, who will furnish sketch elevations and drawings suitable for the requirements of the plan adopted, and nature of the site.

In the selection of Contractors to be asked to ten-

der for the work, the proprietor may have nominees of his own to add to the list of the Architect, but the latter must be allowed full discretionary powers in accepting or rejecting any of them for good cause. Although it is permissible, if a proviso is made to that effect, when asking for tenders, to reject the lowest or any tender, the "Golden Rule" should not be lightly disregarded, and the work given to a favored Contractor at the figure of a lower one.

Before the contracts are signed, be sure that everything is provided for and down in black and white, and nothing drawn up loosely. After signatures are affixed the proprietor must be prepared to duly carry out his obligations as faithfully as he will expect the contractor to fulfil his. It is the custom to pay the contractor, as the building progresses, eighty-five per cent. of the value of the work done on the certificate of the Architect, and the remaining fifteen per cent. thirty days after the completion of all trades. The Architect's commission is five per cent. on the total cost of the building, and should be paid—one-third when the contracts are signed, another third when the building is half completed, and the balance after all other accounts are settled. This is one of the smallest items of expenditure, and scarcely commensurate with its worth, when the immense amount of time given to supervision of the works is considered, and, as the sage Franklin truly says, "Not to oversee workmen is to leave them your purse open!"

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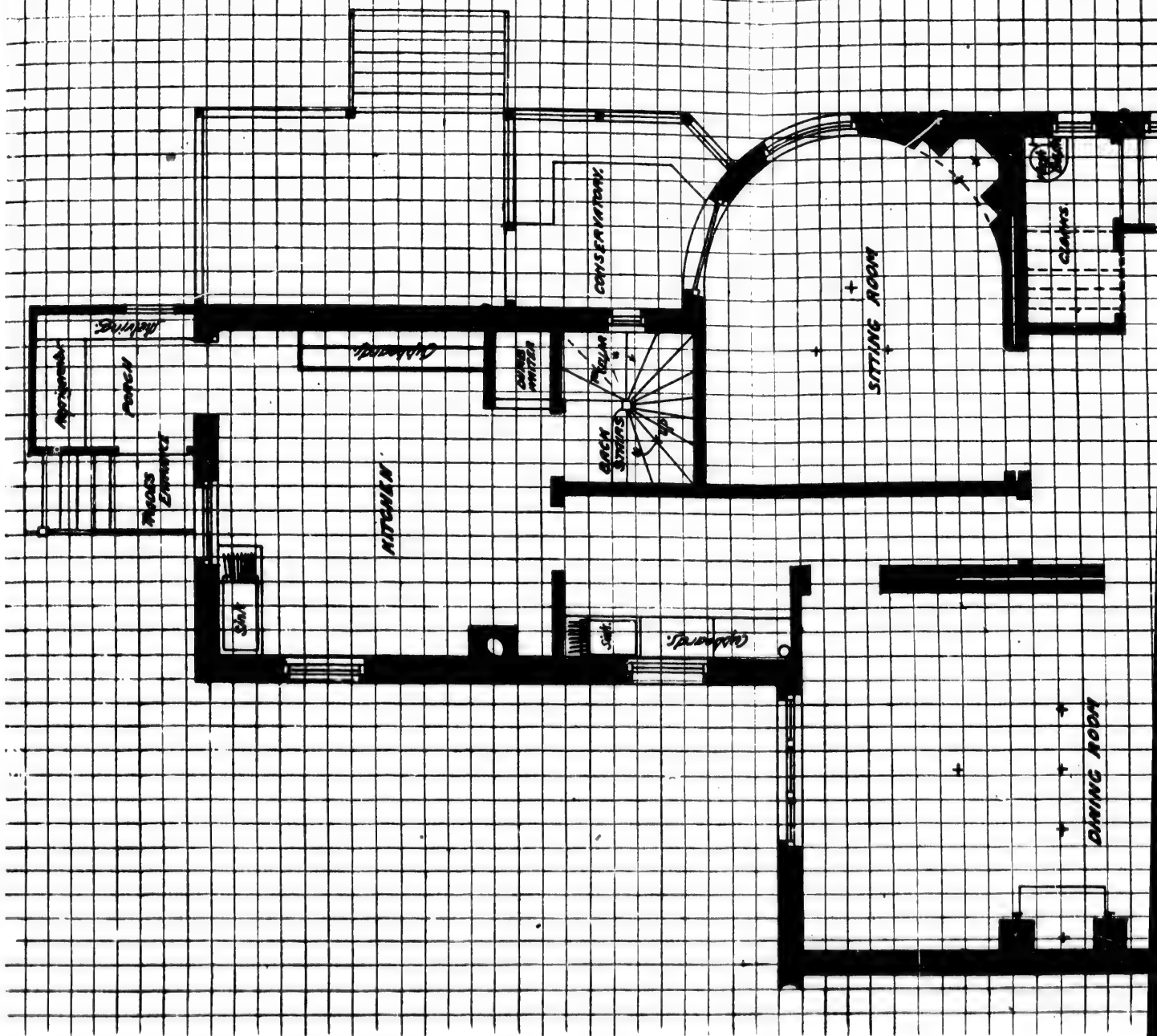
Amiot & Lemay.....	Masons
Bulmer, J. E.....	Carpenter
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Briggs, W. M.....	Plumber
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Babcock & Wilcock, Ltd.....	Boilers
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Ballantyne, Jas.....	Plumber
Beaudry, L.....	Carpenter
Boon, W. I.....	Bricklayer
Cowen, Amos.....	Bricklayer
Cochrane, James.....	Asphalt and cement
Castle & Son.....	Painters
Cowan, G. A.....	Bricks
Cook, W. J.....	Plasterer
Campbell & Gilday.....	Roofers

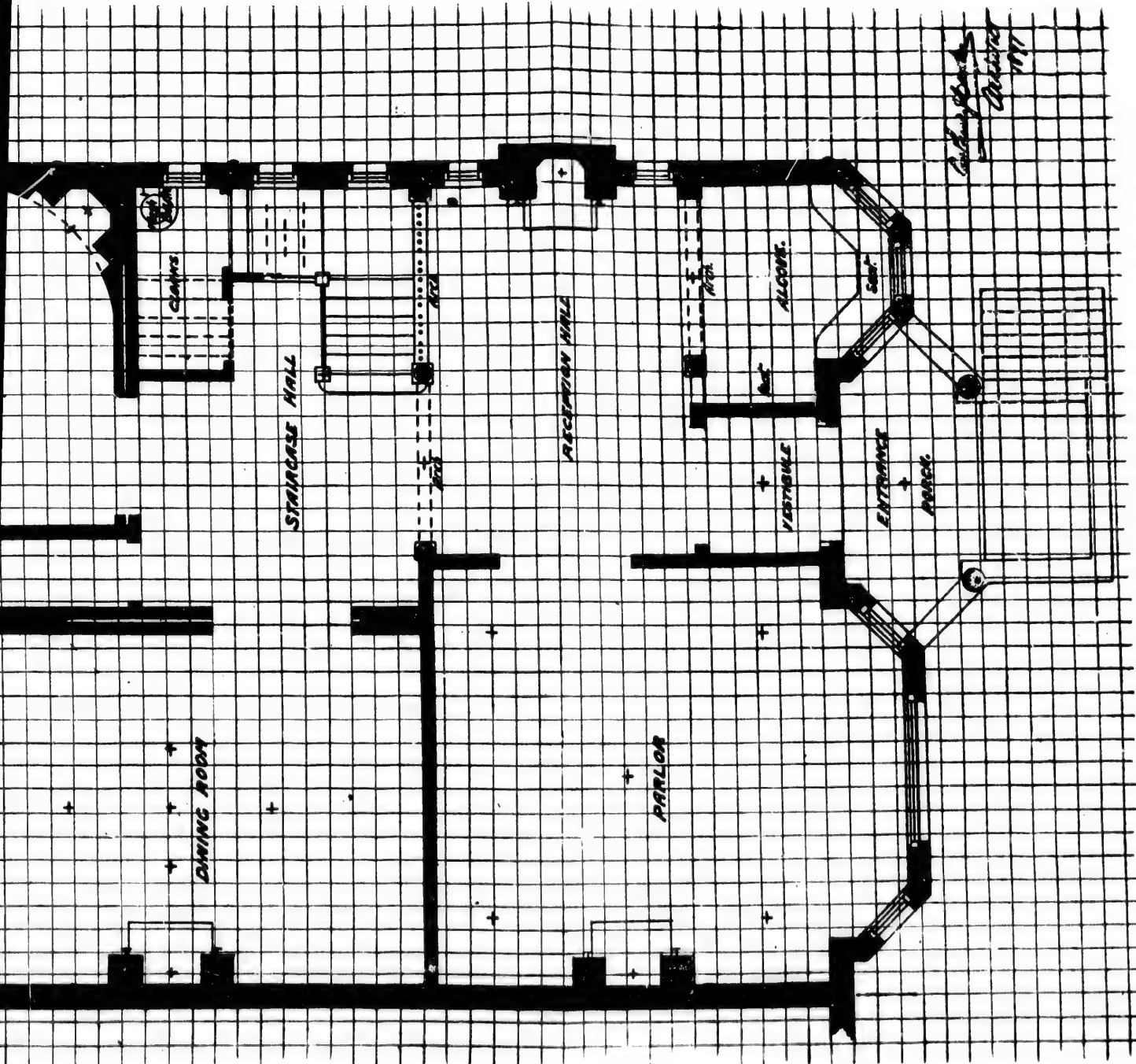
Carroll Bros.....	Plumbers
Cadieux, Hector.....	Carpenter
Callard, S.....	Bricklayer
Collins, Isaac.....	Carpenter
Cunningham, Wm.....	Marble
DeGuise, Oliver.....	Bricklayer
Dominion Bridge Company.....	Iron work
Dartnell, E. F.....	Bricks, stone, etc.
Dodds, P. D., & Co.....	Paints and oils
Forde, Thos.....	Carpenter
Fournier, F., & Son.....	Masons
Forsythe Granite and Marble Company.....	Marble
Grier, G. A.....	Lumber
Garth & Co.....	Gas and steamfitters
Grothe Freres.....	Carpenter
Grier, J. & B.....	Lumber
Gervais & Son.....	Lime
Heggie & Stewart.....	Masons
Hughes, J. W.....	Plumber
Hutchison, J. H.....	Mason
Hickey, J. N.....	Asbestos
Houghton, E. T.....	Painter
Henderson, J. T.....	Carpenter
Hyde, F., & Co.....	Cement, tiles and fire brick
Horton, F.....	Plumber
Ives, H. R., & Co.....	Heaters and iron work
Knott & Gardner.....	Plasterers
Kimber, G. S.....	Painter
King, Warden, & Son.....	Heaters and iron work
Lewis, Isaac.....	Bricklayer
Lyall, Peter, & Sons.....	Masons
Locker, G. R., & Co.....	Mantles and tiles
Laprairie Brick Company.....	Bricks
Lidstone, Jno.....	Carpenter
Lemay, E. H.....	Lumber
Lamarche, Jos.....	Plumber
Lambert, Jos.....	Carpenter
Luxfer Prism Company, Ltd.....	Prisms
Lockerby & McComb.....	Roofing materials
Morrison, Jno., & Son.....	Plasterers
Murphy, John.....	Painter
Montreal Roofing Company.....	Roofers
Morrison, T. A., & Co.....	Bricks
Miller, Bros. & Thoms.....	Elevators and iron work
Montreal Electric Company.....	Electricians
Montreal Terra Cotta Company.....	Terra Cotta

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..... Plumbers	Malleable Iron Company.....	Iron work
..... Carpenter	Massey, Fred. (Gurney-Massey Co.).....	Heaters
..... Bricklayer	Montreal Quarry Company.....	Stone
..... Carpenter	Martineau & Fils, O.....	Masons
..... Marble	Montreal Lime Company.....	Lime
..... Bricklayer	Montreal Lumber Company.....	Lumber
..... Iron work	McLean, John.....	Plasterer
ks, stone, etc.	McLaurin, A. P.....	Lumber
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d steamfitters	Ness, McLaren & Bate.....	Electricians
..... Carpenter	Nicholson, Geo. W. T.....	Mason
..... Lumber	Paton, Laird & Son.....	Carpenters
..... Lime	Paterson Manufacturing Co.....	Building paper
..... Masons	Pyke, J. W., & Co.....	Iron work
..... Plumber	Pallascio, A.....	Hardware
..... Mason	Rutherford, W., & Sons.....	Lumber, sash and doors
..... Asbestos	Reid, Robt.....	Marble, tiles and mantles
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..... Carpenter	Roberts, Geo.....	Carpenter
and fire brick	Royal Electric Light Company.....	Electric lighting
..... Plumber	Sheppard, Chas.....	Bricks
and iron work	Sheppard, Geo. J.....	Bricks
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..... Painter	Scott, W. W., & Co.....	Carpenters
and iron work	Scott, W. P.....	Painter
... Bricklayer	Shearer Co., The James.....	Lumber, sash and doors
..... Masons	Stephenson, W. A., & Co.....	Plumbers
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..... Bricks	Standard Drain Pipe Co. (St. Johns).....	Drain pipes
... Carpenter	St. Louis, Em.....	Contractor
..... Lumber	Wighton & Morison & Co.....	Masons
..... Plumber	Wand, P. C.....	Bricklayer
... Carpenter	Williams, C. T. (Geo. W. Reed & Co.).....	Roofers
..... Prisms	Walker, Jas., & Co.....	Hardware
ng materials	Wand, A. E.....	Bricklayer
... Plasterers	Watson, John.....	Plumber
..... Painter	Wilson Bros.....	Masons
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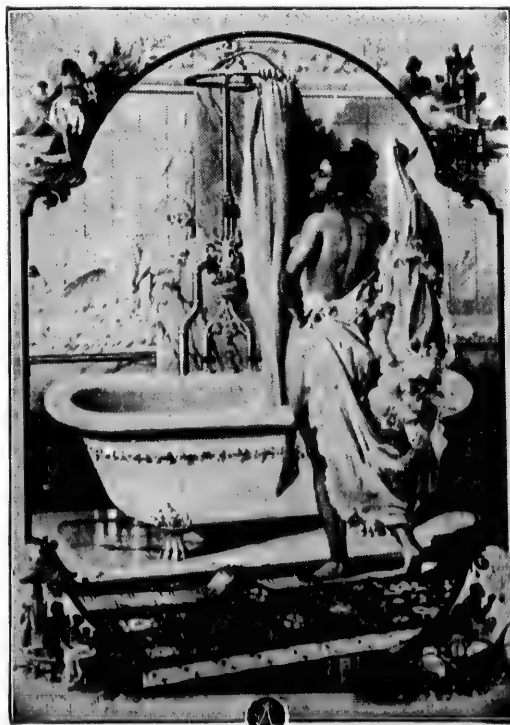
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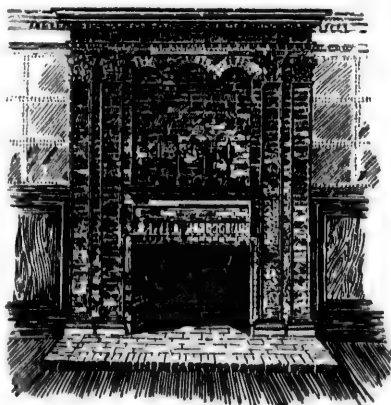
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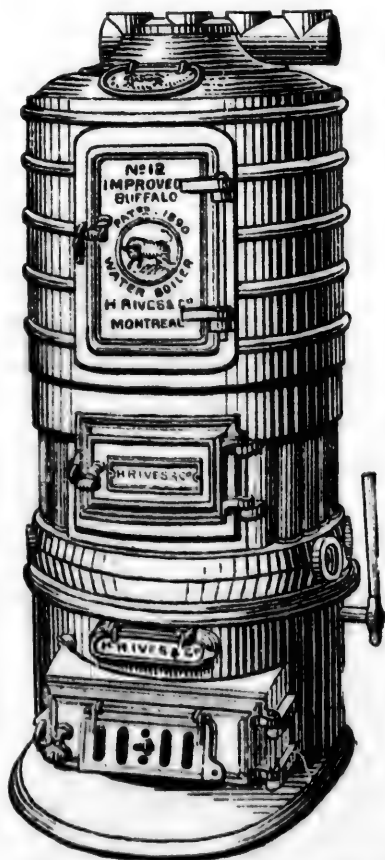
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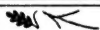
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